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ABSTRACT

Described are (1) some past works on psychological types of scientists, and (2) recent data collected at the University of Florida. The "science-minded types" are described, the frequencies of these types that can be expected to occur in high school students and teachers are discussed, and implications for conveying scientific information to the less science-minded public are considered. The Myers-Briggs Type Indicator is used to assess the theory of C. G. Jung. The instrument measures aspects of perception, judgment, extraversion, and introversion. These characteristics can be analyzed in various ways to yield analyses of samples of students and teachers. Data obtained by using the Myers-Briggs Indicator in a number of situations are used to provide information for the various sections of the paper. (RH)

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PERSONALITY VARIABLES:

MODAL PROFILES THAT CHARACTERIZE

VARIOUS FIELDS OF SCIENCE

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entitled

BIRTH OF NEW WAYS TO RAISE
A SCIENTIFICALLY LITERATE SOCIETY

Presiding: Mary Budd Rowe

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PERSONALITY VARIABLES:
Modal Profiles that Characterize the Various Fields of Science

The purpose of this paper is to describe some work on psychological types of scientists which, though published over a decade ago, is still relatively unknown, and then to supplement this report with current data collected at the University of Florida. Once the "science-minded types" are described, the paper will show what frequencies of these types can be expected to appear in high school students--and their teachers. Implications for conveying scientific ideas to the less science-minded will be discussed. Finally, the distribution of types in the population will be related to the task of obtaining support for "pure research" in a democratic society.

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JUNG'S THEORY OF PSYCHOLOGICAL TYPES

The psychological types described in this paper result from the interaction of four mental powers described by C. G. Jung (1972) and the attitudes in which they are most likely to be expressed. "The gist of the theory is that much apparently random variation in human behavior is actually quite orderly, being due to certain basic differences in the way people prefer to use perception and judgment" (Myers, 1962). The instrument used to implement Jung's theory is the Myers-Briggs Type Indicator. The scores of the Indicator, a 166-item self-report questionnaire, generate 16 types, each with its own excellence and valuable contributions.

The Functions of Perception and Judgment

Jung postulates two basically different kinds of perception, used by everyone, but not equally preferred. Eight types, the "sensing types," prefer to look at the world primarily through what their senses tell them, and become observant, fact-minded, and realistic. The other eight types, the "intuitive types," prefer to look at the world primarily through their intuition, and become imaginative, or theory-minded, interested in possibilities and in finding the patterns of complex problems. One would predict that sensing types, if interested in science, would prefer those fields where careful and accurate observation and classification are essential. One would also predict that intuitive types, if interested in science, would prefer fields where breaking new ground at a theoretical or abstract level is essential.

Jung also postulates two basically different axes for judgment, used by all but not equally preferred by all types. The "thinking types" prefer to make decisions objectively, analytically, logically, ordering events in terms of cause and effect. The "feeling types" prefer to make decisions by ordering events into priorities and importance, weighing values. Both processes are considered equally rational, but the two judging processes can lead to quite different answers! One would predict that thinking types, if interested in science, would be more attracted to fields where they worked with matter which operates on logical principles, and that feeling types would be more attracted to the behavioral sciences where an understanding of people is the critical element.

The attitudes

Jung also postulated two fundamentally different attitudes in meeting the world, extraversion and introversion. Though everyone extraverts at times and introverts at times, the theory assumes that eight of the types have a preference for the

extraverted attitude, and eight for the introverted attitude. When extraverting, a person is drawn toward the external world, wishes to confront it and be actively involved with it, and tends to give its characteristics importance. When introverting, a person somewhat defends against the impact of the world, wishing time to conceptualize it clearly, and to understand it in depth. We might expect that extraverted scientists would have more interest in making sure their discoveries impact events, while introverted scientists might find equal satisfaction in knowing they had found a concept or theory that explained events.

Finally, in implementing Jung's theory, Myers adds a scale describing a preference for using a judging or a perceptive attitude in one's extraverted life. Persons preferring to deal with the environment in the judging attitude tend to seek system, order, organization and planfulness while those preferring to deal with the environment in the perceptive attitude tend to stay more receptive, open, and curious about events. Judging types are happiest when they can control events; perceptive types are happiest when they can understand events.

The theory provides for excellence in each type through development of a guiding and organizing dominant function, supplemented by an auxiliary which provides balance two ways--by ensuring that the person has good command of both perception and judgment, and by ensuring that the person develops both the extraverted and introverted attitudes. Myers uses the judgment-perception scale to point to the function--sensing, intuition, thinking or feeling--which is dominant in a given type's personality, and to a second function which provides balance as the auxiliary.

Figure 1 shows the order in which the four scales are presented and the letters used to identify each scale. Figure 2 shows the dominant and auxiliary for each type. On the right of the figure are described two important ways in which the types are grouped. These groupings are relevant to understanding scientists.

Combinations of Perception and Judgment: The Columns of the Type Table

In the first, the groupings relate to combinations of the functions of perception and judgment. The types combining sensing plus thinking (ST) are described as the "practical and matter-of-fact" people who prefer to deal with what is tangible and real, and with objects which work on logical principles. Our expectation was that persons of these types, if interested in science, would be most attracted to the sciences where careful and meticulous observation and classification are important, such as the biological sciences. In the second column are people described as sympathetic and friendly (SF). These types also prefer to deal with the immediate realities, but since they make their decisions with the valuing (feeling) function, they are more interested in the human side of problems. We expected relatively few of these types to be interested in the sciences, though many might wish to apply the findings of science to human betterment. In column three are the types which combine intuition plus feeling (NF), called the "enthusiastic and insightful" types. People in these types are more interested in seeing new possibilities, theoretical and abstract or imaginative relationships of events or ideas, and, because they prefer feeling, they are more concerned with possibilities for people than with possibilities in the world of objects and machines. We expected that those people in these types who are interested in science would be attracted particularly to the behavioral sciences. And finally, the fourth column includes the people who prefer intuition plus thinking (NT). These types are also interested in possibilities and theory, but prefer to work with materials that follow logical principles. Myers calls these the "logical and ingenious" types, and predicted that many scientists--particularly in the physical sciences--would fall in these types, especially the two introverted ones, INTJ and INTP. In the "type tables" to be shown later in this paper, you will have a chance to see whether, as Jung's theory would predict, scientists are found most often in columns 4 and 3, and least often in column 2.

Combinations of Perception and Attitude: The Quadrants of the Type Table

Finally, there is a way of looking at groupings of types which relates to their motivation for learning, by combining style of perception (sensing or intuition) with interest in the extraverted or introverted attitude. In the upper right of the type table, Myers groups the four types who have the most natural interest in "knowledge for its own sake"--the introverts who are interested in seeing possibilities, theoretical and abstract, imaginative or symbolic relationships of events or ideas (IN). In the lower left quadrant are the realistic extraverts who prefer to deal with what is practical and real (ES). We expected the greatest contrast to occur between these two quadrants, with most scientists in the IN quadrant and fewest in the ES quadrant. Since intuitives are postulated to have a greater interest in finding patterns in complex events, we expected more EN types than ES types among scientists. Since introverts are more interested in clarification of concepts and ideas, we expected more IS types than ES types among scientists.

Predictions of Type in Science

To summarize our expectations, the theory would predict that for students interested in science, and for scientists:

I > E Introverts outnumber extraverts
N > S Intuitive types outnumber sensing types
T > F Thinking types outnumber feeling types in the physical sciences and
F > T Feeling types outnumber thinking types in the behavioral sciences

The columns fall in this order: NT > NF > ST > SF
The quadrants fall in this order: IN > EN > IS > ES

DISTRIBUTIONS OF TYPES IN THE POPULATION

In making these predictions, it is important to begin with an understanding of the distribution of types in different populations.

Distribution of Types in High School Populations

In the original work with the Type Indicator, Myers (1962) found clear evidence that sensing types outnumber intuitive types. Figures 3 and 4 show the type distributions for the Myers samples of non-college-preparatory and college-preparatory males. Figures 5 and 6 show distributions for females. In the non-college-preparatory samples, 86% of males and 87% of females reported a preference for sensing perception. In the college preparatory samples, 58% of males and 58% of females reported a preference for sensing perception. Inspection of the tables shows that in all four tables, the "academic" IN types are outnumbered by the "pragmatic" ES types. Figures 7 and 8 show representative data from among a large number of samples of current high school students, collected at the University of Florida. In both the small city high school (Figure 7) and a composite of two university laboratory schools (Figure 8) the "pragmatic" ES types outnumber the "academic" IN types.

Figure 9 describes the sample of 1960 National Merit Finalists, collected by John Holland and reported in the *Manual* by Myers. For comparison, Figure 10 shows a present-day sample of high school students brought to the University of Florida for four summers as part of a program to identify Florida's future scientists. As predicted, in both samples introverts outnumber extraverts, and intuitive types outnumber sensing types, the columns are ordered NT > NF > ST > SF and the quadrants IN > EN > IS > ES. Figures 11 and 12 show the Holland data by males and females,

and Figures 13 and 14 show the Florida data by males and females. As is typical of most samples comparing males and females, there are somewhat more feeling types among females. However, the two distributions are similar enough to conclude that in both males and females, the "science-minded types" are more attracted to science.

Over a year ago, in a discussion with an assistant to the Florida program who had worked closely with the students over three summers, I asked if he could identify the "super-stars" in the group. He named 24 students of whom 21 preferred introversion, 23 preferred intuition, 15 preferred thinking, and 16 preferred the judging attitude. In the columns, they fell 14 NT, 9 NF, 1 ST and 0 SF. In the quadrants, 20 IN, 3 EN, 1 IS and 0 ES. Nine of the 24 were in one type, INTJ. Dr. Luther Arnold, who created this project, and Dr. Elizabeth Abbott who now directs it, have an impressive body of data on these students which is in the process of analysis. When their findings are reported, I hope they can give us much more differentiated predictions of the kinds of science interests of different types of students, and the ways different types can best develop these interests.

It is clear from the Myers data and our current data that the science-minded students are in a minority in high schools, but in the majority in programs designed to select them.

Distribution of Types in College Populations

Tables 1 to 6 are part of a larger study at the University of Florida in which incoming students were followed up one or two years after entering the University, to see whether they were choosing majors which, in theory, should be attractive to their types. The main finding here is the clear preference for intuition of the students planning to enter the physical sciences. Table 5 shows the fields of study ranked by preference for ST, SF, NF and NT. the NT types are significantly more attracted to the physical sciences and engineering, and significantly less attracted to nursing and education. The SF types are significantly more attracted to nursing and education, and less attracted to arts and sciences. The NF types are significantly more attracted to the humanities and behavioral sciences, and the ST types are more attracted to the biological than to the behavioral or physical sciences. Table 6 shows the same fields of study, grouped this time by the quadrants of the type table. The "academic" IN types are significantly more often found in the humanities, the physical sciences and engineering and the "pragmatic" ES types are choosing physical education, nursing and business. The innovative EN types are attracted to the behavioral sciences, and the IS types, who in theory enjoy matching concepts and facts, are attracted (though not significantly so), to the biological sciences and are significantly avoiding the physical sciences.

Figures 15-18 show distributions of the same students in Physical Sciences (Figure 15), Biological Sciences (Figure 16), Behavioral Sciences (Figure 17), and the Humanities (Figure 18). The contrast between types attracted to business and science appeared in the original Myers data, and are shown in Figures 19 and 20. As can be seen, the two tables are a graphic demonstration of the fact that different courses of study attract very different types of students. Conary (1965) at Auburn reported differences among freshmen consistent with the Myers and University of Florida data.

It is important to note, however, that all sixteen types appear in both samples, as do they in the Florida samples. We do not yet know when the rare types in a field--the IN's in business and the ES's in science--are highly effective in making contributions, and when they are unhappy misfits. Nor can we always tell which of the frequent types will be satisfied and competent, and which will not. Jung's theory postulates that excellence comes from increasing one's command of the powers of perception and judgment preferred by one's type, and by becoming at least

passably good at the powers less preferred. In practical terms, it is not enough for highly intuitive students to have an inspired insight into a problem; they must also develop a command of the facts and details needed to check out their intuitions, and judgment in designing tests of their accuracy. Otherwise, intuitions remain only "interesting ideas."

Types of Creative Scientists

The data cited above relate to students. There are data also on scientists, from the studies of highly creative people by Donald MacKinnon and his colleagues at the Institute of Personality Assessment and Research at the University of California at Berkeley. Figures 21, 22, 23 and 24 show the distributions of scientists, mathematicians, writers and architects. These tables are reported in the Manual of the Type Indicator, as reported to Myers by MacKinnon. In a general population where at least three-fourths of students report a preference for sensing perception, the proportion of intuitive types in these creative samples is striking. In a population where extraverts outnumber introverts, the preference for introversion of these creative people is noteworthy. Thinking types are more attracted to mathematics and science, and feeling types to literature, as would also be predicted.

This brief overview of a great deal of data collected with the Myers-Briggs Type Indicator supports the expectation that people do select careers which Jung's theory predicts--that is, careers where the tasks are interesting to their type and call on the kinds of perception and judgment they prefer. Intuitive types are attracted to science--particularly the physical and behavioral sciences. At least in our University of Florida students, there are differences in the types attracted to biology, zoology and physiology, as compared to types attracted to physics, chemistry and astronomy. The Florida findings are consistent with those of Conary (1965).

TYPE DIFFERENCES IN EDUCATION

This symposium is concerned with a "scientifically literate society." Therefore, our concern is not only with scientists, but with the wider public and its understanding of science. In our complex society, all citizens are called on for decisions which require an understanding of scientific methods and findings.

Our data show that some types are more likely to enter the sciences--are more "science-minded." However, so far as we know, all types can and do learn science. It would also be going beyond our evidence to assume that persons of the types rarely becoming scientists are poor scientists. A major need is to make more detailed studies of scientists of all sixteen types, to learn how they differ in motivations, satisfactions, fields of endeavor, methods of work, and scientific accomplishments.

The question of how to teach the sciences is beyond the scope of this paper. However, I would like to review briefly the best-supported findings of type differences in education so that you can consider their implications for science education.

Academic Aptitude

From 8th grade through graduate school, introverts with intuition tend to score highest on academic aptitude measures, and extraverts with sensing score lowest. The ranking of the quadrants is usually IN > EN > IS > ES. (Barberousse 1965; Conary 1965; Damico & Dalsheimer 1974; May 1971; McCaulley & Natter 1974; Myers 1962; Myers & Davis 1964; Reynolds & Hope 1970; Stricker, Schiffman & Ross 1965.)

There are several explanations for this finding. One is that most academic aptitude tests very properly test those academic skills needed for college success--the ability to deal with problems at a symbolic and abstract level, and to draw concepts and ideas from written material. While it is useful for these skills to be developed and measured, we should never forget that there are other valuable abilities not tapped by most academic aptitude measures. Practical intelligence and common sense are examples of abilities likely to be developed in extraverted sensing types, but not assessed in many tests.

Another explanation for the fact that introverts with intuition tend to do well on academic aptitude tests is that in many cases introverts with intuition are likely to have developed the tests. A major contribution of Jung's theory can be the awareness it gives educators and psychologists of our biases and blindsports in developing methods and measures. In these days where testing is under close examination, it can be useful to look more carefully at the way all types can be tested so as to let all types show their own special knowledge and gifts.

Reading

Intuitive types tend to be more interested in reading, to read more books, and they often read faster and with more comprehension than the sensing types. (Damico & Dalsheimer 1974; Guttinger 1974; May 1971; McCaulley & Natter 1974; Millott 1975; Myers 1962.)

Science Interest and Aptitude

Thinking types are somewhat more attracted to the sciences than feeling types, particularly to the physical sciences, mathematics, the biological sciences, and the scientific aspects of engineering. However, on aptitude measures with science tests, we frequently find non-significant differences between thinking and feeling types. When feeling types are motivated to learn science, they do well. Intuition appears to be more important than thinking in science aptitude and achievement. (Damico & Dalsheimer 1974; MacKinnon 1962; May 1971; McCaulley 1976; McCaulley & Natter 1974; Myers 1962; Reynolds & Hope 1970.)

Academic Achievement

While differences are slight and often non-significant, a trend worth watching is that judging types tend to achieve somewhat higher grades for a given level of aptitude than do the more spontaneous perceptive types. It appears that the curiosity of the perceptive types may give them an edge in the knowledge they show in aptitude measures, but the systematic, organized work attitudes of the judging types and their willingness to work out of duty, even if not intensely interested, result in achievement of better grades. (McCaulley & Natter 1974; Myers 1962; Nichols & Holland 1963; Reynolds & Hope 1970). Further research will probably show more judging types among students labeled as "over-achievers."

Types of Teachers

We have collected a number of samples of teachers. Figures 25 and 26 show distributions of elementary and middle school teachers (Figure 25) and public school mathematics teachers (Figure 26). All sixteen types appear in both samples, with sensing types in the majority in each, as they are in the general population. Story (1972) found that mathematics teachers who preferred sensing were more likely to enjoy teaching the lower grades and applied mathematics, while teachers preferring intuition preferred to teach advanced courses in high school. In other data collected at the University of Florida, William Purkey and Betty Siegel found

that the enthusiastic and insightful NF types were particularly attracted to summer seminars in humanistic education. Gordon Lawrence and Richard DeNovellis reported in 1974 that observers of middle school teachers found significant differences in the behaviors of teachers of different types, and in the behaviors of their students as well. Throughout the country a number of studies are now underway on teacher styles and learning styles. Many of these studies have data on types and we can expect more specific and practical information as this work is completed.

When you compare the typical distributions of teachers in the grades with the typical distributions of students, you can see that the majority of students have teachers similar enough to understand them. However, the science-minded students, who are in the minority in the grades, are less likely to have kindred spirits in their teachers. A major challenge for the schools is to find ways to keep the intuitive children, many of whom will be science-minded, working to their full potential. Too often they can get by on flash and charm, without having to develop the powers of concentration and the conscientious work habits that will enable them to make full use of their potential. The organized and systematic sensing-judging teachers, who are likely to stress command of details, could be helpful to the intuitive-perceptive student, with mutual understanding and respect. Unfortunately, our evidence is that intuitive types often are strongly motivated toward independent study, and independence is not easy to cope with in today's crowded classrooms.

The more we learn about how different types of teachers teach, and how different types of students learn, the more we appreciate the complexity of the profession of teaching. It is not easy to conduct a class where one group of children learn best by taking one step at a time, building on solid experience, and where another group leap intuitively to the answer, and need to retrace their steps to check it out.

A SCIENTIFICALLY LITERATE SOCIETY

If we take seriously the task of developing a scientifically literate society, then we need to take into account the interests and the learning styles of all sixteen types. The practical matter-of-fact types will be interested in the practical uses of science, and in the equipment it develops. The sympathetic and friendly types will learn science through direct experience in their own eyes, and will want to apply it for human welfare--as in the health sciences. The enthusiastic and insightful types are a natural bridge between the "pure scientists" and the larger society, because of their insight into the uses of science, and their enthusiasm in showing others their vision. These types also have a natural interest in all the behavioral sciences. (Even in introductory psychology courses, these four types usually account for over half the class.) Finally, the logical ingenious types--especially the introverts, have a strong need for creating complex logical systems and are probably the easiest audience for scientists to attract.

Going back to the quadrants of the type table, the "academic" types enjoy the challenge of learning what has never been known. The "innovators" are interested in knowledge to bring about changes. The "pragmatists" will be interested in those aspects of science which have immediate practical use, and the "compilers and verifiers" are interested in finding the facts to show whether ideas are really true. Science can be approached from any of these vantage points, but it is often difficult to take the time to think through the "translation" of our concepts into the language of an opposite type.

If you remember the earliest tables showing the probable distribution of the types in the population, you will realize how vital it is for science to have translators to convey what we are learning to all types. There is a very pragmatic reason for us to do so. The IN and the NT types are outnumbered at the ballot box, and are probably also outnumbered in our legislatures. If scientists are not to suffer from the feeling that the greater society does not appreciate--even rejects them--we must remain constantly aware that for many types "logic does not speak for itself" and it is not enough "to discover simply for the joy of discovery."

My dream for education and for the bicentennial of our country is that we shall find new ways of valuing the individual gifts of each type and that our dialogues will let in all aspects of type with mutual respect. How better can we solve complex problems, than by valuing the conceptualizing of the introverts, and the broad active view of extraverts -- by making sure our plans rest solidly on a knowledge of the present situation (sensing), take into account a vision of a better future (intuition), hang together logically with no major consequences unforeseen (thinking), and are important to human values (feeling)? Finally, during the process of problem-solving, the perceptive types contribute a curiosity, openness and receptiveness that makes sure the problem is completely seen, and the judging types contribute an organization, planfulness and drive for closure that make sure solutions are found and acted upon.

In the past fifteen years, Jung's ideas are gaining greater appreciation in this country. The Type Indicator focuses on but one side of Jung's complex personality theory--but it is the practical side. I hope this brief overview of some of the research shows you why those of us who have been working with this instrument in counseling, advising and research, have found it a useful tool in understanding and valuing different kinds of people.

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Figure 1

MYERS-BRIGGS TYPE INDICATOR

UNDERSTANDING THE TYPE TABLE

FOUR PREFERENCES ARE SCORED TO ARRIVE AT A PERSON'S TYPE

DOES THE PERSON'S INTEREST FLOW MAINLY TO

E THE OUTER WORLD OF ACTIONS, OBJECTS AND PERSONS?	EXTRAVERSION	INTROVERSION THE INNER WORLD OF CONCEPTS AND IDEAS? **I**

DOES THE PERSON PREFER TO PERCEIVE

S THE IMMEDIATE, REAL, PRACTICAL FACTS OF EXPERIENCE AND LIFE?	SENSING	INTUITION THE POSSIBILITIES, RELATIONSHIPS AND MEANINGS OF EXPERIENCES? **N**

DOES THE PERSON PREFER TO MAKE JUDGMENTS OR DECISIONS

T OBJECTIVELY, IMPERSONALLY, CONSIDERING CAUSES OF EVENTS & WHERE DECISIONS MAY LEAD?	THINKING	FEELING SUBJECTIVELY AND PERSONALLY, WEIGHING VALUES OF CHOICES & HOW THEY MATTER TO OTHERS? **F**

DOES THE PERSON PREFER MOSTLY TO LIVE

J IN A DECISIVE, PLANNED AND ORDERLY WAY, AIMING TO REGULATE & CONTROL EVENTS?	JUDGMENT	PERCEPTION IN A SPONTANEOUS, FLEXIBLE WAY, AIMING TO UNDERSTAND LIFE AND ADAPT TO IT? **P**

THE LOCATION OF THE 16 PREFERENCE TYPES ON THE TYPE TABLE

ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ

EXTRAVERSION-INTROVERSION

I
E

SENSING-INTUITION

S	N

THINKING-FEELING

T	F	T

JUDGMENT-PERCEPTION

J
P
J

Figure 2

THE THEORY: DOMINANT AND AUXILIARY FUNCTIONS FOR EACH TYPE

According to Jung's theory of psychological types, everyone uses all four *functions* (S, N, T, F), and adopts all four *attitudes* (E, I, J, P). The types are called *preference types* because people in each type *prefer* one of the two *perceptive functions* (S or N), and one of the two *judgment functions* (T or F). These preferences appear in the 2 middle letters of the type formula. Types also differ in the functions they prefer to use when in the introverted or extraverted attitudes.

The most preferred, or favorite, or *dominant function*, is extraverted in E types and introverted in I types. The second favorite or *auxiliary function* is introverted in E types and extraverted in I types. The type table below shows these relationships for each of the 16 MBTI types.

ISTJ INTROVERTED SENSING with Thinking Sensing is dominant and introverted Thinking is auxiliary and extraverted	**ISFJ** INTROVERTED SENSING with Feeling Sensing is dominant and introverted Feeling is auxiliary and extraverted	**INFJ** INTROVERTED INTUITION with Feeling Intuition is dominant and introverted Feeling is auxiliary and extraverted	**INTJ** INTROVERTED INTUITION with Thinking Intuition is dominant and introverted Thinking is auxiliary and extraverted
ISTP INTROVERTED THINKING with Sensing Thinking is dominant and introverted Sensing is auxiliary and extraverted	**ISFP** INTROVERTED FEELING with Sensing Feeling is dominant and introverted Sensing is auxiliary and extraverted	**INFP** INTROVERTED FEELING with Intuition Feeling is dominant and introverted Intuition is auxiliary and extraverted	**INTP** INTROVERTED THINKING with Intuition Thinking is dominant and introverted Intuition is auxiliary and extraverted
ESTP EXTRAVERTED SENSING with Thinking Sensing is dominant and extraverted Thinking is auxiliary and introverted	**ESFP** EXTRAVERTED SENSING with Feeling Sensing is dominant and extraverted Feeling is auxiliary and introverted	**ENFP** EXTRAVERTED INTUITION with Feeling Intuition is dominant and extraverted Feeling is auxiliary and introverted	**ENTP** EXTRAVERTED INTUITION with Thinking Intuition is dominant and extraverted Thinking is auxiliary and introverted
ESTJ EXTRAVERTED THINKING with Sensing Thinking is dominant and extraverted Sensing is auxiliary and introverted	**ESFJ** EXTRAVERTED FEELING with Sensing Feeling is dominant and extraverted Sensing is auxiliary and introverted	**ENFJ** EXTRAVERTED FEELING with Intuition Feeling is dominant and extraverted Intuition is auxiliary and introverted	**ENTJ** EXTRAVERTED THINKING with Intuition Thinking is dominant and extraverted Intuition is auxiliary and introverted

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THE 4 COLUMNS: COMBINATIONS OF PERCEPTION AND JUDGMENT

SENSING PLUS THINKING	SENSING PLUS FEELING	INTUITION PLUS FEELING	INTUITION PLUS THINKING
ST	**SF**	**NF**	**NT**
PRACTICAL AND MATTER-OF-FACT	SYMPATHETIC AND FRIENDLY	ENTHUSIASTIC AND INSIGHTFUL	LOGICAL AND INGENIOUS
Like using abilities in	Like using abilities in	Like using abilities in	Like using abilities in
TECHNICAL SKILLS WITH FACTS AND OBJECTS	PRACTICAL HELP AND SERVICES FOR PEOPLE	UNDERSTANDING & COMMUNICATING WITH PEOPLE	THEORETICAL AND TECHNICAL DEVELOPMENTS
for example in	for example in	for example in	for example in
Applied science Business Production Construction and many more	Patient care Community service Sales Teaching and many more	Behavioral science Research Literature & art Teaching and many more	Physical Science Research Management Forecasts & Analysis and many more

THE 4 QUADRANTS: COMBINATIONS OF ATTITUDE AND PERCEPTION

INTROVERSION AND SENSING **IS** KNOWLEDGE IS IMPORTANT TO ESTABLISH TRUTH "THOUGHTFUL REALISTS"	INTROVERSION AND INTUITION **IN** KNOWLEDGE IS IMPORTANT FOR ITS OWN SAKE "THOUGHTFUL INNOVATORS"
EXTRAVERSION AND SENSING **ES** KNOWLEDGE IS IMPORTANT FOR PRACTICAL USE "ACTION-ORIENTED REALISTS"	EXTRAVERSION AND INTUITION **EN** KNOWLEDGE IS IMPORTANT FOR CREATING CHANGE "ACTION-ORIENTED INNOVATORS"

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Figure 3

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

HIGH SCHOOL STUDENTS

MALES IN NON-COLLEGE PREPARATORY COURSE

N = 1430

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ N= 149 %= 10.4	ISFJ N= 82 %= 5.7	INFJ N= 5 %= 0.4	INTJ N= 18 %= 1.3	JUDGING / INTROVERTS
ISTP N= 122 %= 8.5	ISFP N= 102 %= 7.1	INFP N= 26 %= 1.8	INTP N= 27 %= 1.9	PERCEPTIVE / INTROVERTS
ESTP N= 168 %= 11.8	ESFP N= 129 %= 9.0	ENFP N= 45 %= 3.2	ENTP N= 40 %= 2.8	PERCEPTIVE / EXTRAVERTS
ESTJ N= 293 %= 20.5	ESFJ N= 178 %= 12.4	ENFJ N= 16 %= 1.1	ENTJ N= 30 %= 2.1	JUDGING / EXTRAVERTS

	N	PERCENT
E	899	62.9
I	531	37.1
S	1223	85.5
N	207	14.5
T	847	59.2
F	583	40.8
J	771	53.9
P	659	46.1
IJ	254	17.8
IP	277	19.4
EP	382	26.7
EJ	517	36.2
ST	732	51.2
SF	491	34.3
NF	92	6.4
NT	115	8.0
SJ	702	49.1
SP	521	36.4
NP	138	9.6
NJ	69	4.8
TJ	490	34.3
TP	357	25.0
FP	302	21.1
FJ	281	19.6
IN	76	5.3
EN	131	9.2
IS	455	31.8
ES	768	53.7

NOTES: ▯ = 1% of sample

Source of Data: Isabel Briggs Myers. Personal Communication to Center for Applications of Psychological Type.

Figure 4

Myers-Briggs Type Indicator
CAPT, 1976

Type Table

HIGH SCHOOL STUDENTS

MALES IN COLLEGE PREPARATORY COURSE

N = 3503

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ N= 283 %= 8.1	ISFJ N= 139 %= 4.0	INFJ N= 74 %= 2.1	INTJ N= 164 %= 4.7	JUDGING / INTROVERTS
ISTP N= 180 %= 5.1	ISFP N= 153 %= 4.4	INFP N= 146 %= 4.2	INTP N= 209 %= 6.0	PERCEPTIVE / INTROVERTS
ESTP N= 271 %= 7.7	ESFP N= 225 %= 6.4	ENFP N= 250 %= 7.1	ENTP N= 276 %= 7.9	PERCEPTIVE / EXTRAVERTS
ESTJ N= 549 %= 15.7	ESFJ N= 227 %= 6.5	ENFJ N= 124 %= 3.5	ENTJ N= 233 %= 6.6	JUDGING / EXTRAVERTS

	N	PERCENT
E	2155	61.5
I	1348	38.5
S	2027	57.9
N	1476	42.1
T	2165	61.8
F	1338	38.2
J	1793	51.2
P	1710	48.8
IJ	660	18.8
IP	688	19.6
EP	1022	29.2
EJ	1133	32.3
ST	1283	36.6
SF	744	21.2
NF	594	17.0
NT	882	25.2
SJ	1198	34.2
SP	829	23.7
NP	881	25.2
NJ	595	17.0
TJ	1229	35.1
TP	936	26.7
FP	774	22.1
FJ	564	16.1
IN	593	16.9
EN	883	25.2
IS	755	21.6
ES	1272	36.3

NOTES: ▯ = 1% of sample

Source of Data: Myers, I. B. Manual: The Myers-Briggs Type Indicator

Figure 5

Myers-Briggs Type Indicator — Type Table

CAPT, 1976

HIGH SCHOOL STUDENTS

FEMALES IN NON-COLLEGE PREPARATORY COURSE

N = 1884

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 120 % = 6.4	N= 240 % = 12.7	N= 13 % = 0.7	N= 7 % = 0.4	INTROVERTS
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 36 % = 1.9	N= 125 % = 6.6	N= 36 % = 1.9	N= 14 % = 0.7	INTROVERTS
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE
N= 84 % = 4.5	N= 259 % = 13.8	N= 95 % = 5.0	N= 15 % = 0.8	EXTRAVERTS
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 305 % = 16.2	N= 476 % = 25.3	N= 46 % = 2.4	N= 13 % = 0.7	EXTRAVERTS

	N	PERCENT
E	1293	68.6
I	591	31.4
S	1645	87.3
N	239	12.7
T	594	31.5
F	1290	68.5
J	1220	64.8
P	664	35.2
IJ	380	20.2
IP	211	11.2
EP	453	24.0
EJ	840	44.6
ST	545	28.9
SF	1100	58.4
NF	190	10.1
NT	49	2.6
SJ	1141	60.6
SP	504	26.8
NP	160	8.5
NJ	79	4.2
TJ	445	23.6
TP	149	7.9
FP	515	27.3
FJ	775	41.1
IN	70	3.7
EN	169	9.0
IS	521	27.6
ES	1124	59.7

NOTES: ▌ = 1% of sample

Source of Data: Isabel Briggs Myers. Personal Communication to Center for Applications of Psychological Type.

Figure 6

Myers-Briggs Type Indicator — Type Table

CAPT, 1976

HIGH SCHOOL STUDENTS

FEMALES IN COLLEGE PREPARATORY COURSE

N = 2503

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 93 % = 3.7	N= 175 % = 7.0	N= 75 % = 3.0	N= 55 % = 2.2	INTROVERTS
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 50 % = 2.0	N= 123 % = 4.9	N= 155 % = 6.2	N= 80 % = 3.2	INTROVERTS
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE
N= 85 % = 3.4	N= 260 % = 10.4	N= 318 % = 12.7	N= 125 % = 5.0	EXTRAVERTS
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 248 % = 9.9	N= 421 % = 16.8	N= 150 % = 6.0	N= 90 % = 3.6	EXTRAVERTS

	N	PERCENT
E	1697	67.8
I	806	32.2
S	1455	58.1
N	1048	41.9
T	826	33.0
F	1677	67.0
J	1307	52.2
P	1196	47.8
IJ	398	15.9
IP	408	16.3
EP	788	31.5
EJ	909	36.3
ST	476	19.0
SF	979	39.1
NF	698	27.9
NT	350	14.0
SJ	937	37.4
SP	518	20.7
NP	678	27.1
NJ	370	14.8
TJ	486	19.4
TP	340	13.6
FP	856	34.2
FJ	821	32.8
IN	365	14.6
EN	683	27.3
IS	441	17.6
ES	1014	40.5

NOTES: ▌ = 1% of sample

Source of Data: Isabel Briggs Myers. Personal Communication to Center for Applications of Psychological Type.

Figure 7

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

PUBLIC HIGH SCHOOL STUDENTS

306 STUDENTS FROM A SMALL CITY SCHOOL IN FLORIDA

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 25	N= 26	N= 7	N= 4	INTROVERTS
%= 8.1	%= 8.5	%= 2.3	%= 1.3	
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 14	N= 38	N= 21	N= 5	
%= 4.6	%= 12.4	%= 6.9	%= 1.6	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE
N= 17	N= 39	N= 33	N= 5	
%= 5.6	%= 12.8	%= 10.8	%= 1.6	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 11	N= 48	N= 8	N= 5	EXTRAVERTS
%= 3.6	%= 15.7	%= 2.6	%= 1.6	

	N	PERCENT
E	166	54.2
I	140	45.8
S	218	71.2
N	88	28.8
T	86	28.1
F	220	71.9
J	134	43.8
P	172	56.2
IJ	62	20.3
IP	78	25.5
EP	94	30.7
EJ	72	23.5
ST	67	21.9
SF	151	49.4
NF	69	22.6
NT	19	6.2
SJ	110	36.0
SP	108	35.3
NP	64	20.9
NJ	24	7.8
TJ	45	14.7
TP	41	13.4
FP	131	42.8
FJ	89	29.1
IN	37	12.1
EN	51	16.7
IS	103	33.7
ES	115	37.6

NOTES: ▯ = 1% of sample

Data collected by Dr. M. K. Morgan, College of Education, University of Florida as part of a study to determine career patterns and academic achievement in high school students. The study was partially funded by the Florida Educational Research and Development Council.

Figure 8

Myers-Briggs Type Indicator
CAPT, 1976

Type Table

UNIVERSITY LABORATORY SCHOOL STUDENTS

459 STUDENTS IN 9TH, 10TH, 11TH, GRADES

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 15	N= 30	N= 16	N= 9	INTROVERTS
%= 3.27	%= 6.54	%= 3.49	%= 1.96	
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 22	N= 50	N= 54	N= 16	
%= 4.79	%= 10.89	%= 11.76	%= 3.49	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE
N= 19	N= 49	N= 77	N= 14	
%= 4.14	%= 10.68	%= 16.78	%= 3.05	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 22	N= 42	N= 19	N= 5	EXTRAVERTS
%= 4.79	%= 9.15	%= 4.14	%= 1.09	

	N	PERCENT
E	247	53.81
I	212	46.19
S	249	54.25
N	210	45.75
T	122	26.58
F	337	73.42
J	158	34.42
P	301	65.58
IJ	70	15.25
IP	142	30.94
EP	159	34.64
EJ	88	19.17
ST	78	16.99
SF	171	37.25
NF	166	36.17
NT	44	9.59
SJ	109	23.75
SP	140	30.50
NP	161	35.08
NJ	49	10.68
TJ	51	11.11
TP	71	15.47
FP	230	50.11
FJ	107	23.31
IN	95	20.70
EN	115	25.05
IS	117	25.49
ES	132	28.76

NOTES: ▯ = 1% of sample

Data are a composite of samples collected by Dr. Hellen Guttinger and Dr. Sandra Damico at the University of Florida, and Dr. Frank Natter at Florida State University at the laboratory schools of these universities.

Figure 9

Myers-Briggs Type Indicator
CAPT, 1975

Type Table
July 5, 1975

HIGH SCHOOL STUDENTS

NATIONAL MERIT FINALISTS OF 1960

N = 1001

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ N= 46 %= 4.6	ISFJ N= 24 %= 2.4	INFJ N= 67 %= 6.7	INTJ N=139 %= 13.9	JUDGING / INTROVERTS
ISTP N= 25 %= 2.5	ISFP N= 11 %= 1.1	INFP N=119 %= 11.9	INTP N=140 %= 14.0	PERCEPTIVE / INTROVERTS
ESTP N= 7 %= 0.7	ESFP N= 20 %= 2.0	ENFP N=123 %= 12.3	ENTP N=110 %= 11.0	PERCEPTIVE / EXTRAVERTS
ESTJ N= 30 %= 3.0	ESFJ N= 13 %= 1.3	ENFJ N= 54 %= 5.4	ENTJ N= 73 %= 7.3	JUDGING / EXTRAVERTS

	N	PERCENT
E	430	43.0
I	571	57.0
S	176	17.6
N	825	82.4
T	570	56.9
F	431	43.1
J	446	44.6
P	555	55.4
IJ	276	27.6
IP	295	29.5
EP	260	26.0
EJ	170	17.0
ST	108	10.8
SF	68	6.8
NF	363	36.3
NT	462	46.2
SJ	113	11.3
SP	63	6.3
NP	492	49.2
NJ	333	33.3
TJ	288	28.8
TP	282	28.2
FP	273	27.3
FJ	158	15.8
IN	465	46.4
EN	360	36.0
IS	106	10.6
ES	70	7.0

NOTES: ▮ = 1% of sample

Source of Data: John Holland, as reported in Manual of the Myers-Briggs Type Indicator by Isabel Briggs Myers. Princeton, New Jersey: Educational Testing Service, 1962.

Figure 10

Myers-Briggs Type Indicator
CAPT 7-8-76

Type Table

HIGH SCHOOL STUDENTS

FLORIDA FUTURE SCIENTISTS

N = 314

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ N= 24 %= 7.64	ISFJ N= 11 %= 3.50	INFJ N= 25 %= 7.96	INTJ N= 39 %= 12.42	JUDGING / INTROVERTS
ISTP N= 4 %= 1.27	ISFP N= 5 %= 1.59	INFP N= 28 %= 8.92	INTP N= 28 %= 8.92	PERCEPTIVE / INTROVERTS
ESTP N= 5 %= 1.59	ESFP N= 4 %= 1.27	ENFP N= 41 %= 13.06	ENTP N= 25 %= 7.96	PERCEPTIVE / EXTRAVERTS
ESTJ N= 11 %= 3.50	ESFJ N= 17 %= 5.41	ENFJ N= 28 %= 8.92	ENTJ N= 19 %= 6.05	JUDGING / EXTRAVERTS

	NUMBER	PERCENT
E	150	47.77
I	164	52.23
S	81	25.80
N	233	74.20
T	155	49.36
F	159	50.64
J	174	55.41
P	140	44.59
IJ	99	31.53
IP	65	20.70
EP	75	23.89
EJ	75	23.89
ST	44	14.01
SF	37	11.78
NF	122	38.85
NT	111	35.35
SJ	63	20.06
SP	18	5.73
NP	122	38.85
NJ	111	35.35
TJ	93	29.62
TP	62	19.75
FP	78	24.84
FJ	81	25.80
IN	120	38.22
EN	113	35.99
IS	44	14.01
ES	37	11.78

NOTES: ▮ = 1% of sample

Composite sample of 14th, 15th, 16th, 17th and 18th summer science research programs at the University of Florida, in which high school students worked with University researchers during the summer months.

Data were collected by Dr. Luther A. Arnold, Director Emeritus, and Dr. Elizabeth F. Abbott, Executive Secretary, Florida Foundation for Future Scientists.

Figure 11

Myers-Briggs Type Indicator

Type Table
CAPT 2-18-76

HIGH SCHOOL STUDENTS

MALE NATIONAL MERIT FINALISTS OF 1960

N = 671

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 36	N= 7	N= 31	N=110	
%= 5.37	%= 1.04	%= 4.62	%= 16.39	
I = 0.66*	I = 0.26***	I = 2.19***	I = 3.50***	INTROVERTS
ISTP	**ISFP**	**INFP**	**INTP**	
N= 21	N= 6	N= 81	N=107	
%= 3.13	%= 0.89	%= 12.07	%= 15.95	
I = 0.61*	I = 0.20***	I = 2.90***	I = 2.67***	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 7	N= 10	N= 62	N= 78	
%= 1.04	%= 1.49	%= 9.24	%= 11.62	
I = 0.13***	I = 0.23***	I = 1.29	I = 1.48**	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	
N= 23	N= 6	N= 28	N= 58	
%= 3.43	%= 0.89	%= 4.17	%= 8.64	
I = 0.22***	I = 0.14***	I = 1.18	I = 1.30	EXTRAVERTS
				JUDGING

	N	PERCENT	INDEX
E	272	40.54	0.66***
I	399	59.46	1.55***
S	116	17.29	0.30***
N	555	82.71	1.56***
T	440	65.57	1.06
F	231	34.43	0.90
J	299	44.56	0.87**
P	372	55.44	1.14**
IJ	184	27.42	1.46***
IP	215	32.04	1.63***
EP	157	23.40	0.80**
EJ	115	17.14	0.53***
ST	87	12.97	0.35***
SF	29	4.32	0.20***
NF	202	30.10	1.78***
NT	353	52.61	2.09***
SJ	72	10.73	0.31***
SP	44	6.56	0.28***
NP	328	44.88	1.94***
NJ	227	33.83	1.99***
TJ	227	33.83	0.96
TP	213	31.74	1.19**
FP	159	23.70	1.07
FJ	72	10.73	0.67***
IN	329	49.03	2.90***
EN	226	33.68	1.34***
IS	70	10.43	0.48***
ES	46	6.86	0.19***

NOTES: ▮ = 1% of sample
Index = ratio of observed to expected frequencies. Expected frequency is % in Myers sample of 3505 high school males in college preparatory course.
Probabilities based on Chi Square * $p<.05$ ** $p<.01$ *** $p<.001$

Data were collected by John Holland and are reported by Isabel Briggs Myers.

Figure 12

Myers-Briggs Type Indicator

Type Table
CAPT 2-18-76

HIGH SCHOOL STUDENTS

FEMALE NATIONAL MERIT FINALISTS OF 1960

N = 330

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 10	N= 17	N= 36	N= 29	
%= 3.03	%= 5.15	%= 10.91	%= 8.79	
I = 0.82	I = 0.74	I = 3.64***	I = 4.00***	INTROVERTS
ISTP	**ISFP**	**INFP**	**INTP**	
N= 4	N= 5	N= 38	N= 33	
%= 1.21	%= 1.52	%= 11.52	%= 10.00	
I = 0.61	I = 0.31**	I = 1.86***	I = 3.13***	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 0	N= 10	N= 61	N= 32	
%= 0.0	%= 3.03	%= 18.48	%= 9.70	
I = 0.00***	I = 0.29***	I = 1.45**	I = 1.94***	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	
N= 7	N= 7	N= 26	N= 15	
%= 2.12	%= 2.12	%= 7.88	%= 4.55	
I = 0.21***	I = 0.13***	I = 1.31	I = 1.26	EXTRAVERTS
				JUDGING

	N	PERCENT	INDEX
E	158	47.88	0.71***
I	172	52.12	1.62***
S	60	18.18	0.31***
N	270	81.82	1.95***
T	130	39.39	1.19*
F	200	60.61	0.90*
J	147	44.55	0.85**
P	183	55.45	1.16**
IJ	92	27.88	1.75***
IP	80	24.24	1.49***
EP	103	31.21	0.99
EJ	55	16.67	0.46***
ST	21	6.36	0.33***
SF	39	11.82	0.30***
NF	161	48.79	1.75***
NT	109	33.03	2.36***
SJ	41	12.42	0.33***
SP	19	5.76	0.28***
NP	164	49.70	1.83***
NJ	106	32.12	2.17***
TJ	61	18.48	0.95
TP	69	20.91	1.54***
FP	114	34.55	1.01
FJ	86	26.06	0.79*
IN	136	41.21	2.83***
EN	134	40.61	1.49***
IS	36	10.91	0.62**
ES	24	7.27	0.18***

NOTES: ▮ = 1% of sample
Index = ratio of observed to expected frequencies. Expected frequency is % in Myers sample of 2503 females in h.s. college preparatory course.
Probabilities based on Cho Square * $p<.05$ ** $p<.01$ *** $p<.001$

Data were collected by John Holland and reported by Isabel Briggs Myers.

Figure 13

Myers-Briggs Type Indicator

Type Table
CAPT 2-19-76

HIGH SCHOOL STUDENTS

MALE FLORIDA FUTURE SCIENTISTS

N = 149

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 14	N= 3	N= 12	N= 25	
%= 9.4	%= 2.0	%= 8.1	%= 16.8	
ISTP	ISFP	INFP	INTP	INTROVERTS PERCEPTIVE
N= 3	N= 0	N= 11	N= 14	
%= 2.0	%= 0.0	%= 7.4	%= 9.4	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE EXTRAVERTS
N= 1	N= 2	N= 25	N= 9	
%= 0.7	%= 1.3	%= 16.8	%= 6.0	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 5	N= 5	N= 12	N= 8	
%= 3.4	%= 3.4	%= 8.0	%= 5.4	

	NUMBER	PERCENT
E	67	45.0
I	82	55.0
S	33	22.1
N	116	77.9
T	79	53.0
F	70	47.0
J	84	56.4
P	65	43.6
IJ	54	36.2
IP	28	18.8
EP	37	24.8
EJ	30	20.1
ST	23	15.4
SF	10	6.7
NF	60	40.3
NT	56	37.6
SJ	27	18.1
SP	6	4.0
NP	59	39.6
NJ	57	38.3
TJ	52	34.9
TP	27	18.1
FP	38	25.5
FJ	32	21.5
IN	62	41.6
EN	54	36.2
IS	20	13.4
ES	13	8.7

NOTES: ▮ = 1% of sample

Composite sample of males in 14th, 15th, 16th and 17th summer science research programs at the University of Florida, in which high school students worked with university researchers during the summer months.

Data were collected by Dr. Luther A. Arnold, Director Emeritus, and by Dr. Elizabeth F. Abbott, Executive Secretary, Florida Foundation for Future Scientists.

Figure 14

Myers-Briggs Type Indicator

Type Table
CAPT 2-19-76

HIGH SCHOOL STUDENTS

FEMALE FLORIDA FUTURE SCIENTISTS

N = 100

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 3	N= 5	N= 9	N= 6	
%= 3.0	%= 5.0	%= 9.0	%= 6.0	
ISTP	ISFP	INFP	INTP	INTROVERTS PERCEPTIVE
N= 1	N= 5	N= 11	N= 8	
%= 1.0	%= 5.0	%= 11.0	%= 8.0	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE EXTRAVERTS
N= 3	N= 1	N= 11	N= 9	
%= 3.0	%= 1.0	%= 11.0	%= 9.0	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 3	N= 10	N= 11	N= 4	
%= 3.0	%= 10.0	%= 11.0	%= 4.0	

	NUMBER	PERCENT
E	52	52.0
I	48	48.0
S	31	31.0
N	69	69.0
T	37	37.0
F	63	63.0
J	51	51.0
P	49	49.0
IJ	23	23.0
IP	25	25.0
EP	24	24.0
EJ	28	28.0
ST	10	10.0
SF	21	21.0
NF	42	42.0
NT	27	27.0
SJ	21	21.0
SP	10	10.0
NP	39	39.0
NJ	30	30.0
TJ	16	16.0
TP	21	21.0
FP	28	28.0
FJ	35	35.0
IN	34	34.0
EN	35	35.0
IS	14	14.0
ES	17	17.0

NOTES: ▮ = 1% of sample

Composite sample of females in 14th, 15th, 16th and 17th summer science research programs at the University of Florida, in which high school students worked with university researchers during the summer months.

Data were collected by Dr. Luther A. Arnold, Director Emeritus, and by Dr. Elizabeth F. Abbott, Executive Secretary, Florida Foundation for Future Scientists.

Table 1

University of Florida Followup Study

RANKINGS OF FIELDS OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

COLLEGE (or Composite Group)	N	Percent	Selection Index	Percent	Selection Index
		EXTRAVERTS		INTROVERTS	
PHYSICAL EDUCATION & HEALTH	59	69.5	1.33**	30.5	0.64**
NURSING	124	59.7	1.15	40.3	0.84
JOURNALISM & COMMUNICATIONS	247	59.5	1.14*	40.5	0.85*
EDUCATION	246	57.7	1.11	42.3	0.88
Pre-Medical	196	56.6	1.09	43.4	0.91
BUSINESS ADMINISTRATION	402	54.7	1.05	45.3	0.95
Behavioral Sciences	416	53.4	1.02	46.6	0.97
All Health Professions	588	53.1	1.02	46.9	0.98
Undecided as to Major	307	52.4	1.01	47.6	0.99
HEALTH RELATED PROFESSIONS	105	52.4	1.01	47.6	0.99
Pre-Law	82	51.2	0.98	48.8	1.02
ARTS AND SCIENCES	898	50.7	0.97	49.3	1.03
AGRICULTURE	148	50.0	0.96	50.0	1.04
Physical Sciences	139	48.9	0.94	51.1	1.07
ARCHITECTURE & FINE ARTS	296	48.3	0.93	51.7	1.08
Biological Sciences	98	48.0	0.92	52.0	1.09
Humanities	150	44.7	0.86	55.3	1.16
ENGINEERING	194	36.6	0.70***	63.4	1.32***
PHARMACY	67	31.3	0.60***	68.7	1.43***

Table 2

University of Florida Followup Study

RANKINGS OF FIELDS OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

COLLEGE (or Composite Group)	N	Percent	Selection Index	Percent	Selection Index
		SENSING TYPES		INTUITIVE TYPES	
PHYSICAL EDUCATION & HEALTH	59	66.1	1.41**	33.9	0.64**
PHARMACY	67	61.2	1.31*	38.8	0.73*
BUSINESS ADMINISTRATION	402	60.0	1.28***	40.3	0.75***
NURSING	124	59.7	1.28**	40.3	0.76**
EDUCATION	246	54.5	1.17*	45.5	0.85*
All Health Professions	588	50.5	1.08*	49.5	0.93*
HEALTH RELATED PROFESSIONS	105	49.5	1.06	50.5	0.95
ENGINEERING	194	49.0	1.05	51.0	0.96
AGRICULTURE	148	48.6	1.04	51.4	0.96
Biological Sciences	98	48.0	1.03	52.0	0.98
Undecided as to Major	307	46.9	1.00	53.1	1.00
Pre-Law	82	41.5	0.89	58.5	1.10
Pre-Medical	196	41.3	0.88	58.7	1.10
ARCHITECTURE & FINE ARTS	296	40.2	0.86*	59.8	1.12*
Behavioral Sciences	416	39.7	0.85**	60.3	1.13**
ARTS AND SCIENCES	898	39.1	0.84***	60.9	1.14***
JOURNALISM & COMMUNICATIONS	247	38.1	0.81**	61.9	1.16**
Humanities	150	34.7	0.74**	65.3	1.23**
Physical Sciences	139	34.5	0.74**	65.5	1.23**

NOTES: Colleges are upper case; groupings of majors are lower case.
Selection index is ratio of observed to expected frequencies.
Significance is based on Chi Square statistic. * p.05 ** p.01 *** p.001
M. H. McCaulley, Department of Clinical Psychology, University of Florida, 10-75.

Table 3

University of Florida Followup Study

RANKINGS OF FIELDS OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

COLLEGE (or Composite Group)	N	Percent	Selection Index	Percent	Selection Index
		THINKING TYPES		FEELING TYPES	
ENGINEERING	194	52.6	1.42***	47.4	0.75***
Biological Sciences	98	48.0	1.30*	52.0	0.83*
Pre-Medical	196	44.9	1.21*	55.1	0.87*
Physical Sciences	139	44.6	1.21	55.4	0.88
BUSINESS ADMINISTRATION	402	44.3	1.20**	55.7	0.88**
PHYSICAL EDUCATION & HEALTH	59	42.4	1.15	57.6	0.91
AGRICULTURE	148	40.5	1.10	59.5	0.94
Pre-Law	82	39.0	1.05	61.0	0.97
ARTS AND SCIENCES	898	39.0	1.05	61.0	0.97
Behavioral Sciences	416	36.5	0.99	63.5	1.01
ARCHITECTURE & FINE ARTS	296	35.8	0.97	64.2	1.02
Humanities	150	35.3	0.95	64.7	1.03
JOURNALISM & COMMUNICATIONS	247	35.2	0.95	64.8	1.03
PHARMACY	67	34.3	0.93	65.7	1.04
Undecided as to Major	307	33.9	0.92	66.1	1.05
All Health Professions	588	33.0	0.89*	67.0	1.06*
NURSING	124	21.8	0.59***	78.2	1.24***
HEALTH RELATED PROFESSIONS	105	20.0	0.54***	80.0	1.27***
EDUCATION	246	19.1	0.52***	80.9	1.28***

Table 4

University of Florida Followup Study

RANKINGS OF FIELDS OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

COLLEGE (or Composite Group)	N	Percent	Selection Index	Percent	Selection Index
		JUDGING TYPES		PERCEPTIVE TYPES	
ENGINEERING	194	62.4	1.24***	37.6	0.76***
PHARMACY	67	61.2	1.21	38.8	0.78
Pre-Medical	196	58.7	1.16*	41.3	0.83*
NURSING	124	58.1	1.15	41.9	0.85
All Health Professions	588	57.6	1.14***	42.4	0.85***
Physical Sciences	139	57.6	1.14	42.4	0.86
BUSINESS ADMINISTRATION	402	56.5	1.12**	43.5	0.88**
EDUCATION	246	55.7	1.11	44.3	0.89
Pre-Law	82	53.7	1.06	46.3	0.93
AGRICULTURE	148	52.7	1.05	47.3	0.95
HEALTH RELATED PROFESSIONS	105	52.4	1.04	47.6	0.96
Biological Sciences	98	51.0	1.01	49.0	0.99
PHYSICAL EDUCATION & HEALTH	59	50.8	1.01	49.2	0.99
ARTS AND SCIENCES	898	46.8	0.93*	53.2	1.07*
ARCHITECTURE & FINE ARTS	296	46.3	0.92	53.7	1.08
Humanities	150	45.3	0.90	54.7	1.10
Undecided as to Major	307	44.6	0.89*	55.4	1.12*
Behavioral Sciences	416	41.6	0.83***	58.4	1.18***
JOURNALISM & COMMUNICATIONS	247	37.2	0.74***	62.8	1.26***

Table 5

UNIVERSITY OF FLORIDA FOLLOWUP STUDY

RANKINGS OF FIELD OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

COLUMNS OF THE TYPE TABLE

ST - SENSING & THINKING				SF - SENSING & FEELING				NF - INTUITION & FEELING				NT - INTUITION & THINKING			
COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX
PHYS. ED & HEALTH	59	32.2	1.69**	NURSING	124	44.4	1.60***	HEALTH REL. PROF.	105	43.8	1.24	Physical Sci.	139	32.4	1.80***
BUSINESS ADM.	402	29.1	1.53***	EDUCATION	246	41.9	1.51***	Humanities	150	43.3	1.23*	ENGINEERING	194	30.4	1.69***
Biological Sci.	98	24.5	1.29	PHARMACY	67	40.3	1.46*	JOURNALISM	247	41.7	1.18*	Pre-Law	82	25.6	1.43
ENGINEERING	194	22.2	1.16	HEALTH REL. PROF.	105	36.2	1.31*	Behavioral Sci.	416	41.4	1.17**	Pre-Medical	196	23.5	1.31*
Pre-Medical	196	21.4	1.13	PHYS.ED. & HEALTH	59	33.9	1.22	Undecided	307	40.4	1.14*	Biological Sci.	98	23.5	1.31
Undecided	307	21.2	1.17	All Health Prof.	588	32.5	1.17**	ARCH. & FINE ARTS	296	39.9	1.13	ARTS & SCIENCES	898	22.6	1.26***
AGRICULTURE	148	21.0	1.10	BUSINESS ADM.	402	30.8	1.11	EDUCATION	246	39.0	1.11	Humanities	150	22.0	1.22
PHARMACY	67	20.9	1.10	Pre-Law	82	28.0	1.01	ARTS & SCIENCES	898	38.3	1.08*	JOURNALISM	247	20.2	1.13
All Health Prof.	588	18.0	0.95	AGRICULTURE	148	27.7	1.00	Pre-Medical	196	35.2	1.00	ARCH. & FINE ARTS	296	19.9	1.11
Behavioral Sci.	416	17.6	0.92	ENGINEERING	194	26.8	0.97	All Health Prof.	588	34.5	0.98	AGRICULTURE	148	19.6	1.09
ARTS & SCIENCES	898	16.4	0.86*	Undecided	307	25.7	0.93	NURSING	124	33.9	0.96	Behavioral Sci.	416	19.0	1.06
ARCH. & FINE ARTS	296	15.9	0.83	ARCH. & FINE ARTS	296	24.3	0.88	Physical Sci.	139	33.1	0.94	BUSINESS ADM.	402	15.2	0.84
NURSING	124	15.3	0.80	Biological Sci.	98	23.5	0.85	Pre-Law	82	32.9	0.93	All Health Prof.	588	15.0	0.83*
JOURNALISM	247	15.0	0.79	JOURNALISM	247	23.1	0.83	AGRICULTURE	148	31.8	0.90	PHARMACY	67	13.4	0.75
Pre-Law	82	13.4	0.70	ARTS & SCIENCES	898	22.7	0.82***	Biological Sci.	98	28.6	0.81	Undecided	307	12.7	0.71*
Humanities	150	13.3	0.70	Physical Sci.	139	22.3	0.81	PHARMACY	67	25.4	0.72	PHYS.ED. & HEALTH	59	10.2	0.57
HEALTH REL. PROF.	105	13.3	0.70	Behavioral Sci.	416	22.1	0.80**	BUSINESS ADM.	402	24.9	0.70***	HEALTH REL. PROF.	105	6.7	0.37**
EDUCATION	246	12.6	0.66**	Humanities	150	21.3	0.77	PHYS. ED. & HEALTH	59	23.7	0.67	EDUCATION	246	6.5	0.36***
Physical Sci.	139	12.2	0.64*	Pre-Medical	196	19.9	0.72*	ENGINEERING	194	20.6	0.58***	NURSING	124	6.4	0.36***

NOTES: Colleges are in upper case; major groupings of majors within or across colleges are lower case.
Selection Index is ratio of observed to expected frequency. Significance based on Chi Square statistic. * p .05 ** p .01 *** p .001

SOURCE OF DATA: Followup of University of Florida study of incoming students of 1971 or 1972 followed up in 1974. Data are based on 3362 students for whom type is known.
Investigator: Mary H. McCaulley, Ph. D., Typology Laboratory, 108 SSRB, University of Florida, Gainesville, Florida 32611 [10-10-75]

Table 6

UNIVERSITY OF FLORIDA FOLLOWUP STUDY

RANKINGS OF FIELD OF STUDY BY PERCENTAGES OF STUDENTS ENROLLED

QUADRANTS OF THE TYPE TABLE

IN - INTROVERTS WITH INTUITION				EN - EXTRAVERTS WITH INTUITION				IS - INTROVERTS WITH SENSING				ES - EXTRAVERTS WITH SENSING			
COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX	COLLEGE OR GROUP	N	%	SELECTION INDEX
Humanities	150	37.3	1.51***	JOURNALISM	247	36.8	1.29**	PHARMACY	67	43.3	1.87***	PHYSICAL ED.	59	45.8	1.94***
Physical Sci.	139	35.2	1.42**	Behavioral Sci.	416	33.6	1.18*	BUSINESS ADM.	402	30.1	1.30***	NURSING	124	31.4	1.33*
ENGINEERING	194	35.0	1.42***	Pre-Medical	196	33.2	1.16	AGRICULTURE	148	29.0	1.26	BUSINESS ADM.	402	29.8	1.27**
Pre-Law	82	30.5	1.23	ARTS & SCIENCES	898	31.3	1.10*	ENGINEERING	194	28.4	1.23	EDUCATION	246	29.7	1.26*
ARCH. & FINE ARTS	296	30.1	1.21*	AGRICULTURE	148	30.4	1.07	Biological Sci.	98	28.6	1.23	Undecided	307	25.7	1.09
ARTS & SCIENCES	898	29.6	1.20***	Physical Sci.	139	30.2	1.06	NURSING	124	28.2	1.22	All Health Prof.	588	24.8	1.05
Behavioral Sci.	416	26.7	1.08	ARCH. & FINE ARTS	296	29.7	1.04	HEALTH REL. PROF.	105	26.7	1.15	Pre-Medical	196	23.5	1.00
Undecided	307	26.4	1.07	HEALTH. REL. PROF.	105	29.5	1.04	All Health Prof.	588	25.7	1.11	Pre-Law	82	23.2	0.98
Pre-Medical	196	25.5	1.03	Biological Sci.	98	28.6	1.00	EDUCATION	246	24.8	1.07	HEALTH REL. PROF.	105	22.9	0.97
PHARMACY	67	25.4	1.03	NURSING	124	28.2	0.99	ARCH. & FINE ARTS	296	21.6	0.93	JOURNALISM	247	22.7	0.96
JOURNALISM	247	25.1	1.01	All Health Prof.	588	28.2	0.99	Undecided	307	21.2	0.91	ENGINEERING	194	20.6	0.87
Biological Sci.	98	23.5	0.95	EDUCATION	246	28.0	0.98	PHYSICAL ED.	59	20.3	0.88	Behavioral Sci.	416	19.7	0.84*
All Health Prof.	588	21.3	0.86*	Pre-Law	82	28.0	0.98	Behavioral Sci.	416	20.0	0.86	AGRICULTURE	148	19.6	0.83
AGRICULTURE	148	21.0	0.85	Humanities	150	28.0	0.98	ARTS & SCIENCES	898	19.7	0.85**	Biological Sci.	98	19.4	0.82
HEALTH REL. PROF.	105	21.0	0.85	Undecided	307	26.7	0.94	Pre-Law	82	18.3	0.79	ARTS & SCIENCES	898	19.4	0.82***
EDUCATION	246	17.5	0.71**	BUSINESS ADM.	402	24.9	0.87	Humanities	150	18.0	0.78	Physical Sci.	139	18.7	0.79
BUSINESS ADM.	402	15.2	0.61***	PHYSICAL ED.	59	23.7	0.83	Pre-Medical	196	17.9	0.77	Humanities	150	16.7	0.71*
NURSING	124	12.1	0.49**	ENGINEERING	194	16.9	0.56***	Physical Sci.	139	15.8	0.68*	ARCH. & FINE ARTS	296	18.6	0.79*
PHYSICAL ED.	59	10.2	0.41**	PHARMACY	67	13.4	0.47**	JOURNALISM	247	15.4	0.66**	PHARMACY	67	17.9	0.76

NOTES: Colleges are in upper case; groupings of majors across colleges are in lower case.
Selection ratio is ratio of observed to expected frequency. Significance based on Chi Square statistic. * p .05 ** p .01 *** p .001

SOURCE OF DATA: Followup of University of Florida study of incoming students of 1971 or 1972 followed up in 1974. Data are based on 3362 students for whom type is known.
Investigator: Mary H. McCaulley, Ph. D., Typology Laboratory, 108 SSRB, University of Florida, Gainesville, Florida 32611 [10-10-75]

Figure 15

Myers-Briggs Type Indicator

Type Table
CAPT 2-17-76

UNIVERSITY STUDENTS MAJORING IN

PHYSICAL SCIENCES

N = 139

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 6	N= 10	N= 9	N= 16	
%= 4.32	%= 7.19	%= 6.47	%= 11.51	
I = 0.63	I = 0.89	I = 1.36	I = 2.60***	
ISTP	**ISFP**	**INFP**	**INTP**	INTROVERTS
N= 2	N= 4	N= 11	N= 13	
%= 1.44	%= 2.88	%= 7.91	%= 9.35	
I = 0.53	I = 0.53	I = 0.73	I = 1.98**	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 3	N= 5	N= 15	N= 6	
%= 2.16	%= 3.60	%= 10.79	%= 4.32	
I = 0.82	I = 0.70	I = 0.80	I = 0.93	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	EXTRAVERTS
N= 6	N= 12	N= 11	N= 10	
%= 4.32	%= 8.63	%= 7.91	%= 7.19	
I = 0.63	I = 0.96	I = 1.28	I = 1.73	JUDGING

	N	Percent	Index
E	68	48.92	0.94
I	71	51.08	1.07
S	48	34.53	0.74**
N	91	65.47	1.23**
T	62	44.60	1.21
F	77	55.40	0.88
J	80	57.55	1.14
P	59	42.45	0.86
IJ	41	29.50	1.22
IP	30	21.58	0.91
EP	29	20.86	0.80
EJ	39	28.06	1.07
ST	17	12.23	0.64*
SF	31	22.30	0.81
NF	46	33.09	0.94
NT	45	32.37	1.80***
SJ	34	24.46	0.79
SP	14	10.07	0.63
NP	45	32.37	0.96
NJ	46	33.09	1.69***
TJ	38	27.34	1.23
TP	24	17.27	1.18
FP	35	25.18	0.72*
FJ	42	30.22	1.08
IN	49	35.25	1.42**
EN	42	30.22	1.06
IS	22	15.83	0.68*
ES	26	18.71	0.79

NOTES: ▮ = 1% of sample
I = selection index or ratio of observed to expected frequencies.
Expected frequencies based on % in sample of 3362 University of Florida entering students in 1971 or 1972.
Probabilities based on Chi Square * p.05 ** p .01 *** p .001

Mary H. McCaulley, Ph. D. Department of Clinical Psychology, University of Florida

Figure 16

Myers-Briggs Type Indicator

Type Table
CAPT 2-17-76

UNIVERSITY STUDENTS MAJORING IN

BIOLOGICAL SCIENCES

N = 98

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 11	N= 8	N= 2	N= 6	
%= 11.22	%= 8.16	%= 2.04	%= 6.12	
I = 1.63	I = 1.01	I = 0.43	I = 1.38	
ISTP	**ISFP**	**INFP**	**INTP**	INTROVERTS
N= 4	N= 5	N= 11	N= 4	
%= 4.08	%= 5.10	%= 11.22	%= 4.08	
I = 1.51	I = 0.94	I = 1.04	I = 0.86	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 4	N= 4	N= 11	N= 5	
%= 4.08	%= 4.08	%= 11.22	%= 5.10	
I = 1.56	I = 0.79	I = 0.83	I = 1.10	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	EXTRAVERTS
N= 5	N= 6	N= 4	N= 8	
%= 5.10	%= 6.12	%= 4.08	%= 8.16	
I = 0.75	I = 0.68	I = 0.66	I = 1.96	JUDGING

E	47	47.96	0.92
I	51	52.04	1.09
S	47	47.96	1.03
N	51	52.04	0.98
T	47	47.96	1.30*
F	51	52.04	0.98
J	50	51.02	1.01
P	48	48.98	0.99
IJ	27	27.55	1.14
IP	24	24.49	1.03
EP	24	24.49	0.94
EJ	23	23.47	0.90
ST	24	24.49	1.29
SF	23	23.47	0.85
NF	28	28.57	0.81
NT	23	23.47	1.31
SJ	30	30.61	0.99
SP	17	17.35	1.09
NP	31	31.63	0.94
NJ	20	20.41	1.04
TJ	30	30.61	1.37*
TP	17	17.35	1.18
FP	31	31.63	0.91
FJ	20	20.41	0.73
IN	23	23.47	0.95
EN	28	28.57	1.00
IS	28	28.57	1.23
ES	19	19.39	0.82

NOTES: ▮ = 1% of sample
I = selection index or ratio of observed to expected frequencies.
Expected frequencies based on % in sample of 3362 University of Florida entering students in 1971 or 1972.
Probabilities based on Chi Square * p.05 ** p.01 *** p.001

Mary H. McCaulley, Ph. D., Department of Clinical Psychology, University of Florida

Figure 17

Myers-Briggs Type Indicator

Type Table
CAPT 2-17-76

UNIVERSITY STUDENTS MAJORING IN

BEHAVIORAL SCIENCES

N = 416

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 25 %= 6.01	N= 29 %= 6.97	N= 20 %= 4.81	N= 15 %= 3.61	
I = 0.87	I = 0.86	I = 1.01	I = 0.81	INTROVERTS
ISTP	**ISFP**	**INFP**	**INTP**	
N= 11 %= 2.64	N= 18 %= 4.33	N= 51 %= 12.26	N= 25 %= 6.01	
I = 0.98	I = 0.80	I = 1.13	I = 1.27	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 19 %= 4.57	N= 23 %= 5.53	N= 76 %= 18.27	N= 20 %= 4.81	
I = 1.74**	I = 1.07	I = 1.35**	I = 1.04	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	
N= 18 %= 4.33	N= 22 %= 5.29	N= 25 %= 6.01	N= 19 %= 4.57	
I = 0.64*	I = 0.59**	I = 0.97	I = 1.10	EXTRAVERTS
				JUDGING

	N	PERCENT	INDEX
E	222	53.37	1.02
I	194	46.63	0.97
S	165	39.66	0.85**
N	251	60.34	1.13**
T	152	36.54	0.99
F	264	63.46	1.01
J	173	41.59	0.83***
P	243	58.41	1.18***
IJ	89	21.39	0.88
IP	105	25.24	1.07
EP	138	33.17	1.28***
EJ	84	20.19	0.77**
ST	73	17.55	0.92
SF	92	22.12	0.80**
NF	172	41.35	1.17**
NT	79	18.99	1.06
SJ	94	22.60	0.73***
SP	71	17.07	1.07
NP	172	41.35	1.23***
NJ	79	18.99	0.97
TJ	77	18.51	0.83*
TP	75	18.03	1.23*
FP	168	40.38	1.16*
FJ	96	23.08	0.82*
IN	111	26.68	1.08
EN	140	33.65	1.18*
IS	83	19.95	0.86
ES	82	19.71	0.84*

NOTES: ▯ = 1% of sample
I = selection index or ratio of observed to expected frequencies.
Expected frequencies based on % of sample of 3362 University of Florida entering students in 1971 or 1972.
Probabilities based on Chi Square * p.05 ** p.01 *** p.001

Mary H. McCaulley, Ph.D., Department of Clinical Psychology, University of Florida

Figure 18

Myers-Briggs Type Indicator

Type Table
CAPT 2-17-76

UNIVERSITY STUDENTS MAJORING IN

HUMANITIES

N = 150

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	**ISFJ**	**INFJ**	**INTJ**	JUDGING
N= 9 %= 6.00	N= 9 %= 6.00	N= 11 %= 7.33	N= 6 %= 4.00	
I = 0.87	I = 0.74	I = 1.54	I = 0.90	INTROVERTS
ISTP	**ISFP**	**INFP**	**INTP**	
N= 4 %= 2.67	N= 5 %= 3.33	N= 22 %= 14.67	N= 17 %= 11.33	
I = 0.99	I = 0.62	I = 1.35	I = 2.40***	PERCEPTIVE
ESTP	**ESFP**	**ENFP**	**ENTP**	
N= 1 %= 0.67	N= 4 %= 2.67	N= 24 %= 16.00	N= 5 %= 3.33	
I = 0.25	I = 0.52	I = 1.18	I = 0.72	PERCEPTIVE
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**	
N= 6 %= 4.00	N= 14 %= 9.33	N= 8 %= 5.33	N= 5 %= 3.33	
I = 0.59	I = 1.04	I = 0.86	I = 0.80	EXTRAVERTS
				JUDGING

	N	PERCENT	INDEX
E	67	44.67	0.86
I	83	55.33	1.16
S	52	34.67	0.74**
N	98	65.33	1.23**
T	53	35.33	0.95
F	97	64.67	1.03
J	68	45.33	0.90
P	82	54.67	1.10
IJ	35	23.33	0.96
IP	48	32.00	1.35*
EP	34	22.67	0.87
EJ	33	22.00	0.84
ST	20	13.33	0.70
SF	32	21.33	0.77
NF	65	43.33	1.23*
NT	33	22.00	1.22
SJ	38	25.33	0.82
SP	14	9.33	0.59*
NP	68	45.33	1.34**
NJ	30	20.00	1.02
TJ	26	17.33	0.78
TP	27	18.00	1.23
FP	55	36.67	1.05
FJ	42	28.00	1.00
IN	56	37.33	1.51***
EN	42	28.00	0.98
IS	27	18.00	0.78
ES	25	16.67	0.71*

NOTES: ▮ = 1% of sample
I = selection index or ratio of observed to expected frequencies.
Expected frequencies based on % in sample of 3362 University of Florida entering students in 1971 or 1972.
Probabilities based on Chi Square * p.05 ** p.01 *** p.001

Mary H. McCaulley, Ph.D., Department of Clinical Psychology, University of Florida

Figure 19

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

UNIVERSITY STUDENTS

488 BUSINESS STUDENTS

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 44	N= 19	N= 1	N= 13	
%= 9.0	%= 3.9	%= 0.2	%= 2.7	
ISTP	ISFP	INFP	INTP	INTROVERTS PERCEPTIVE
N= 35	N= 7	N= 11	N= 15	
%= 7.2	%= 1.4	%= 2.3	%= 3.1	
ESTP	ESFP	ENFP	ENTP	EXTRAVERTS PERCEPTIVE
N= 63	N= 34	N= 30	N= 35	
%= 12.9	%= 7.0	%= 6.2	%= 7.2	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N=106	N= 43	N= 8	N= 24	
%= 21.7	%= 8.8	%= 1.6	%= 4.9	

	N	PERCENT
E	343	70.3
I	145	29.7
S	351	71.9
N	137	28.1
T	335	68.6
F	153	31.4
J	258	52.9
P	230	47.1
IJ	77	15.8
IP	68	13.9
EP	162	33.2
EJ	181	37.1
ST	248	50.8
SF	103	21.1
NF	50	10.2
NT	87	17.8
SJ	212	43.4
SP	139	28.5
NP	91	18.6
NJ	46	9.4
TJ	187	38.3
TP	148	30.3
FP	82	16.8
FJ	71	14.5
IN	40	8.2
EN	97	19.9
IS	105	21.5
ES	246	50.4

NOTES: ▯ = 1% of sample

SOURCE OF DATA: Manual: The Myers-Briggs Type Indicator. Princeton, NJ. Educational Testing Service, 1962.

Students are 488 male undergraduates of the Wharton School of Finance and Commerce of the University of Pennsylvania, tested in 1956-1957.

Figure 20

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

UNIVERSITY STUDENTS

705 MALE SCIENCE STUDENTS

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 39	N= 12	N= 44	N=128	
%= 5.5	%= 1.7	%= 6.2	%= 18.2	
ISTP	ISFP	INFP	INTP	INTROVERTS PERCEPTIVE
N= 18	N= 15	N= 58	N=123	
%= 2.6	%= 2.1	%= 8.2	%= 17.4	
ESTP	ESFP	ENFP	ENTP	EXTRAVERTS PERCEPTIVE
N= 12	N= 1	N= 55	N= 79	
%= 1.7	%= 0.1	%= 7.8	%= 11.2	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 13	N= 8	N= 27	N= 73	
%= 1.8	%= 1.1	%= 3.8	%= 10.4	

	N	PERCENT
E	268	38.0
I	437	62.0
S	118	16.7
N	587	83.3
T	485	68.8
F	220	31.2
J	344	48.8
P	361	51.2
IJ	223	31.6
IP	214	30.4
EP	147	20.9
EJ	121	17.2
ST	82	11.6
SF	36	5.1
NF	184	26.1
NT	403	57.2
SJ	72	10.2
SP	46	6.5
NP	315	44.7
NJ	272	38.6
TJ	253	35.9
TP	232	32.9
FP	129	18.3
FJ	91	12.9
IN	353	50.1
EN	234	33.2
IS	84	11.9
ES	34	4.8

NOTES: ▯ = 1% of sample

Source of Data: Myers, I. B. Manual: Myers-Briggs Type Indicator, 1962.

Figure 21

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

MACKINNON'S

CREATIVE RESEARCH SCIENTISTS

N = 30

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 0 %= 0.0	N= 0 %= 0.0	N= 1 %= 3.3	N= 11 %= 36.7	
		●	●●●●● ●●●●● ●	INTROVERTS
ISTP	ISFP	INFP	INTP	
N= 0 %= 0.0	N= 0 %= 0.0	N= 2 %= 6.7	N= 4 %= 13.3	
		●●	●●●●	PERCEPTIVE
ESTP	ESFP	ENFP	ENTP	
N= 0 %= 0.0	N= 0 %= 0.0	N= 3 %= 10.0	N= 3 %= 10.0	
		●●●	●●●	PERCEPTIVE
ESTJ	ESFJ	ENFJ	ENTJ	
N= 0 %= 0.0	N= 0 %= 0.0	N= 1 %= 3.3	N= 5 %= 16.7	
		●	●●●●●	EXTRAVERTS
				JUDGING

	NUMBER	PERCENT
E	12	40.0
I	18	60.0
S	0	0.0
N	30	100.0
T	23	76.7
F	7	23.3
J	18	60.0
P	12	40.0
IJ	12	40.0
IP	6	20.0
EP	6	20.0
EJ	6	20.0
ST	0	0.0
SF	0	0.0
NF	7	23.3
NT	23	76.7
SJ	0	0.0
SP	0	0.0
NP	12	40.0
NJ	18	60.0
TJ	16	53.3
TP	7	23.3
FP	5	16.7
FJ	2	6.7
IN	18	60.0
EN	12	40.0
IS	0	0.0
ES	0	0.0

NOTES: ● indicates one scientist

Data are from Institute for Personality Assessment and Research, University of California at Berkeley, as reported by Dr. Donald W. MacKinnon to Isabel Briggs Myers and reported in *Manual: The Myers-Briggs Type Indicator*, page 32.

Figure 22

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

MACKINNON'S

CREATIVE MATHEMATICIANS

N = 28

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 0 %= 0.0	N= 0 %= 0.0	N= 3 %= 10.7	N= 6 %= 21.4	
		●●●	●●●●● ●	INTROVERTS
ISTP	ISFP	INFP	INTP	
N= 1 %= 3.4	N= 0 %= 0.0	N= 4 %= 14.3	N= 6 %= 21.4	
●		●●●●	●●●●● ●	PERCEPTIVE
ESTP	ESFP	ENFP	ENTP	
N= 0 %= 0.0	N= 0 %= 0.0	N= 2 %= 7.1	N= 5 %= 17.9	
		●●	●●●●●	PERCEPTIVE
ESTJ	ESFJ	ENFJ	ENTJ	
N= 0 %= 0.0	N= 0 %= 0.0	N= 0 %= 0.0	N= 1 %= 3.4	
			●	EXTRAVERTS
				JUDGING

	NUMBER	PERCENT
E	8	28.6
I	20	71.4
S	1	3.6
N	27	96.4
T	19	67.9
F	9	32.1
J	10	35.7
P	18	64.3
IJ	9	32.1
IP	11	39.3
EP	7	25.0
EJ	1	3.6
ST	1	3.6
SF	0	0.0
NF	9	32.1
NT	18	64.3
SJ	0	0.0
SP	1	3.6
NP	17	60.7
NJ	10	35.7
TJ	7	25.0
TP	12	42.9
FP	6	21.4
FJ	3	10.7
IN	19	67.9
EN	8	28.6
IS	1	3.6
ES	0	0.0

NOTES: ● indicates one mathematician

Data are from Institute for Personality Assessment and Research, University of California at Berkeley, as reported by Dr. Donald W. MacKinnon to Isabel Briggs Myers and reported in *Manual: The Myers-Briggs Type Indicator*, page 32.

Figure 23

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

MACKINNON'S

CREATIVE WRITERS

N = 17

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 2 %= 11.8	N= 0 %= 0.0	N= 3 %= 17.6	N= 2 %= 11.8	
●●		●●●	●●	
ISTP	ISFP	INFP	INTP	INTROVERTS
N= 0 %= 0.0	N= 0 %= 0.0	N= 2 %= 11.8	N= 0 %= 0.0	PERCEPTIVE
		●●		
ESTP	ESFP	ENFP	ENTP	
N= 0 %= 0.0	N= 0 %= 0.0	N= 5 %= 29.4	N= 2 %= 11.8	PERCEPTIVE
		●●●●●	●●	EXTRAVERTS
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 0 %= 0.0	N= 0 %= 0.0	N= 1 %= 5.9	N= 0 %= 0.0	
		●		

	NUMBER	PERCENT
E	8	47.1
I	9	52.9
S	2	11.8
N	15	88.2
T	6	35.3
F	11	64.7
J	8	47.1
P	9	52.9
IJ	7	41.2
IP	2	11.8
EP	7	41.2
EJ	1	5.9
ST	2	11.8
SF	0	0.0
NF	11	64.7
NT	4	23.5
SJ	2	11.8
SP	0	0.0
NP	9	52.9
NJ	6	35.3
TJ	4	23.5
TP	2	11.8
FP	7	41.2
FJ	4	23.5
IN	7	41.2
EN	8	47.1
IS	2	11.8
ES	0	0.0

NOTES: ● indicates one writer

Data are from Institute for Personality Assessment and Research, University of California at Berkeley, as reported by Dr. Donald W. Mackinnon to Isabel Briggs Myers and reported in *Manual: The Myers-Briggs Type Indicator*, page 32.

Figure 24

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

MACKINNON'S

CREATIVE ARCHITECTS

N = 40

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING
N= 0 %= 0.0	N= 0 %= 0.0	N= 3 %= 7.5	N= 7 %= 17.5	
		●●●	●●●●● ●●	
ISTP	ISFP	INFP	INTP	INTROVERTS
N= 0 %= 0.0	N= 0 %= 0.0	N= 7 %= 17.5	N= 9 %= 22.5	PERCEPTIVE
		●●●●● ●●	●●●●● ●●●●	
ESTP	ESFP	ENFP	ENTP	
N= 0 %= 0.0	N= 0 %= 0.0	N= 6 %= 15.0	N= 2 %= 5.0	PERCEPTIVE
		●●●●● ●	●●	EXTRAVERTS
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 0 %= 0.0	N= 0 %= 0.0	N= 4 %= 10.0	N= 2 %= 5.0	
		●●●●	●●	

	NUMBER	PERCENT
E	14	35.0
I	26	65.0
S	0	0.0
N	40	100.0
T	20	50.0
F	20	50.0
J	16	40.0
P	24	60.0
IJ	10	25.0
IP	16	40.0
EP	8	20.0
EJ	6	15.0
ST	0	0.0
SF	0	0.0
NF	20	50.0
NT	20	50.0
SJ	0	0.0
SP	0	0.0
NP	24	60.0
NJ	16	40.0
TJ	9	22.5
TP	11	27.5
FP	13	32.5
FJ	7	17.5
IN	26	65.0
EN	14	35.0
IS	0	0.0
ES	0	0.0

NOTES: ● indicates one architect.

Data are from Institute for Personality Assessment and Research, University of California at Berkeley, as reported by Dr. Donald W. MacKinnon to Isabel Briggs Myers and reported in *Manual: The Myers-Briggs Type Indicator*, page 32.

Figure 25

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

ELEMENTARY AND MIDDLE SCHOOL TEACHERS

N = 661

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING INTROVERTS
N= 64	N= 90	N= 27	N= 18	
%= 9.7	%= 13.6	%= 4.1	%= 2.7	
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 9	N= 35	N= 50	N= 12	
%= 1.4	%= 5.3	%= 7.6	%= 1.8	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE EXTRAVERTS
N= 11	N= 28	N= 76	N= 24	
%= 1.7	%= 4.2	%= 11.5	%= 3.6	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 59	N= 84	N= 48	N= 26	
%= 8.9	%= 12.7	%= 7.3	%= 3.9	

	N	PERCENT
E	356	53.9
I	305	46.1
S	380	57.5
N	281	42.5
T	223	33.7
F	438	66.3
J	416	62.9
P	245	37.1
IJ	199	30.1
IP	106	16.0
EP	139	21.0
EJ	217	32.8
ST	143	21.6
SF	237	35.8
NF	201	30.4
NT	80	12.1
SJ	297	44.9
SP	83	12.6
NP	162	24.5
NJ	119	18.0
TJ	167	25.3
TP	56	8.5
FP	189	28.6
FJ	249	37.7
IN	107	16.2
EN	174	26.3
IS	198	30.0
ES	182	27.5

NOTES: ▌ = 1% of sample

Source of data: Middle School Teachers tested in 1972-74. Many teachers took the Type Indicator as part of Module: Personality Influences in Teaching and Learning developed under guidance of Dr. Gordon Lawrence, College of Education, University of Florida.

Figure 26

Myers-Briggs Type Indicator
CAPT, 1975

Type Table

MATHEMATICS TEACHERS

N = 413

SENSING TYPES with THINKING	SENSING TYPES with FEELING	INTUITIVE TYPES with FEELING	INTUITIVE TYPES with THINKING	
ISTJ	ISFJ	INFJ	INTJ	JUDGING INTROVERTS
N= 77	N= 42	N= 12	N= 17	
%= 18.6	%= 10.2	%= 2.9	%= 4.1	
ISTP	ISFP	INFP	INTP	PERCEPTIVE
N= 10	N= 17	N= 24	N= 17	
%= 2.4	%= 4.1	%= 5.8	%= 4.1	
ESTP	ESFP	ENFP	ENTP	PERCEPTIVE EXTRAVERTS
N= 8	N= 22	N= 34	N= 10	
%= 1.9	%= 5.3	%= 8.2	%= 2.4	
ESTJ	ESFJ	ENFJ	ENTJ	JUDGING
N= 48	N= 34	N= 18	N= 23	
%= 11.6	%= 8.2	%= 4.4	%= 5.6	

	N	PERCENT
E	197	47.7
I	216	52.3
S	258	62.5
N	155	37.5
T	210	50.9
F	203	49.1
J	271	65.6
P	142	34.4
IJ	148	35.8
IP	68	16.5
EP	74	17.9
EJ	123	29.8
ST	143	34.6
SF	115	27.9
NF	88	23.3
NT	67	16.2
SJ	201	48.7
SP	57	13.8
NP	85	20.6
NJ	70	17.0
TJ	165	40.0
TP	45	10.9
FP	97	23.5
FJ	106	25.7
IN	70	17.0
EN	85	20.6
IS	146	35.4
ES	112	27.1

NOTES: ▌ = 1% of sample

Source of Data: Rudisill (1972), Story (1972) and teachers attending two NSF summer institutes at the University of Florida in 1971-72.